

Theoretical Probability

If the outcomes in a sample space are equally likely to occur, the theoretical probability of an event is the ratio of the number of favorable outcomes (that is, the number of outcomes corresponding to the event) to the number of possible outcomes.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{Number of possible outcomes}}$$

What is the probability of rolling numbers that add to 7 when rolling two standard number cubes?

	1	2	3	4	5	6
1	1,1	2,1	3,1	4,1	5,1	6,1
2	1,2	2,2	3,2	4,2	5,2	6,2
3	1,3	2,3	3,3	4,3	5,3	6,3
4	1,4	2,4	3,4	4,4	5,4	6,4
5	1,5	2,5	3,5	4,5	5,5	6,5
6	1,6	2,6	3,6	4,6	5,6	6,6

Step 1: Make a table of the possible results for the rolls of two number cubes. Circle the ones that sum to 7.

Step 2: Find the number of possible outcomes for the event that the sum of two cubes is 7.

Step 3: Find the probability.

$$P(\text{rolling a sum of 7}) = \frac{6}{36} \text{ or } \frac{1}{6}$$